Amendments to the Specification

Please amend the specification to read as follows.

1. Please add the following paragraph after paragraph [0001]. Support for this amendment may be found at least at page 1/8 of the provisional application which was incorporated into the instant application at the time of filing.

FIELD OF THE INVENTION

The present invention related to a frustrated total internal reflection/total internal reflection (FTIR/TIR) optical fiber switch.

2. Please amend paragraph [0015] through [0019] to read as follows. Support for these amendments may be found at least at pages 1/8 and 2/8 of the provisional application which was incorporated into the instant application at the time of filing.

[0015] Referring to FIGS. 1-4, in which like numerals designate like elements, an optical FTIR/TIR switch assembly 10 is shown including a first angled optical array 11, a second angled optical array 21, and a flexible support structure, such as a flex plate 40. The first optical array 11 includes a support structure, such as a chip 12, that has a face 20 and first and second surfaces 14, 18. The first surface 14 includes at least one first surface groove 16. The second optical array 21 includes a support structure, such as a chip 22, that has a face 30 and first and second surfaces 24, 28. The first surface 24 has at least one first surface groove 26. The chips 12, 22 are preferably formed of silicon.

[0016] The flex plate 40 includes a trench 42 which is preferably formed through isotropic etching. Each of the optical arrays 11, 21 is mounted on the flex plate 40, which is preferably formed of single crystal silicon, such that there is an interface 25 (e.g., a gap) between the faces 20, 30 and such that the interface 25 is positioned above the trench 42. The first and second arrays 11, 21 are positioned and adhered to the flex plate 40. Preferably an adhering material is utilized to immobilize the first and second arrays 11, 21.

[0017] Upon each of the optical arrays 11, 21 are mounted one or more optical fibers, which are preferably formed of silica. As shown, an optical fiber 32 is mounted within the groove 16 of the chip 12, and a corresponding optical fiber 36 is mounted within the groove 26 of the chip 22. The optical fibers 32, 36 have endfaces 34, 38, respectively, that are angled at an angle greater than a total internal reflection angle of the optical fiber material ~~respectfully~~. The optical fibers 32, 36 may be adhered to the grooves 16, 26 through the use of an adhering material or mechanism (not shown). Any suitable adhering material or mechanism may be used, such as, for example, ultraviolet curable epoxy, solder, aluminum-oxide direct thermal compression bonding, or sol-gel or spin-on glass.

[0018] The optical switch assembly 10 is shown in FIGS. 2-3 in, respectively, an opened and a closed state. In FIG. 2, forces are directed upon the flex plate 40 at certain locations. Specifically, a force in a direction B is directed toward the flex plate 40 generally near the trench 42. Further, forces in a direction A are directed away from the flex plate 40 at ends of the flex plate 40. The forces tend to allow the flex plate 40 to flex such that its ends move generally in direction A. Since the chips 12, 22 are mounted on the flex plate 40, such movement results in the endfaces 34 and 38 of the optical fibers 32, 36 moving ~~out of alignment with~~ apart from one another, thus opening the optical switch assembly 10.

[0019] FIG. 3 illustrates the optical switch assembly 10 in the closed position. As shown, force is directed away from the flex plate 40 in the direction A in the general vicinity of the trench 42, while forces are directed toward the flex plate 40 at its ends in the direction B. Through this arrangement of forces, the flex plate 40 tends to ~~move~~ push the endfaces 34, 38 ~~into proper alignment with each other~~ together, thereby closing the optical switch assembly 10.